REMARKS

Claims in the Application. Claim 37 has been amended. Accordingly, Claims 1-25, 36-45 and 47-48 are active in this application. Reconsideration is respectfully requested.

Rejection Under 35 U.S.C. § 103(a) Over *Vollmer and Heying, Walker* or *Alexander*. The Examiner has rejected Claims 1-25, 36-45 and 47-48 under 35 U.S.C. § 103(a) as being unpatentable over the combined disclosures of U.S. Patent No. 5,785,747 ("*Vollmer*") and U.S. Patent No. 6,581,701 ("*Heying*") or U.S. Patent No. 4,664,816 ("*Walker*") or U.S. Patent No. 4,836,940 ("*Alexander*"). This ground for rejection is traversed.

Vollmer does not disclose a composition containing a water-superabsorbent polymer. The Examiner concludes that "it would have been obvious to one having ordinary skill in the art to incorporate the superabsorbent polymers [of *Heying, Walker* or *Alexander*] as taught into the closely analogous viscosifying aqueous brine composition of Vollmer et al., motivated by the reasonable expectation of enhanced reduction in lost circulation of drilling fluid in wellbores as taught." (First full paragraph on page 5 of Office Action.) Applicants disagree.

Vollmer is directed to a method of preventing fluid loss wherein a brine is thickened with a viscosifier based composition. "Fluid loss" in the art refers to the loss of the filtrate or the liquid portion of a fluid into the formation; the fluid being a mud, a brine or a fluid loss control pill. *See*, paragraph 9 of the attached Declaration of Paul H. Javora, Ph.D ("Declaration"). Unlike *Vollmer, Heying, Walker* and *Alexander* are directed to lost circulation materials ("LCM"). "Lost circulation" refers to the loss of a whole fluid, such as the mud or loss control pill into the formation. *See*, paragraph 8 of Declaration. The fluid loss control method addressed in *Vollmer* and the LCM methodology of *Heying, Walker* and *Alexander* are two different and distinct approaches to control the loss of a fluid in a subterranean formation. *See*, paragraph 13 of Declaration.

Lost circulation materials are used in well treatment processes when drilling fluid is literally lost (i.) into fractures induced by excessive mud pressures; (ii.) into pre-existing open fractures; or (iii.) into large openings with structural strength. An enormous variety of lost circulation materials exists and may be divided into four categories: 1) fibrous materials, such as shredded sugar cane stalks, cotton fibers, hoghair, shredded automobile tires, sawdust, etc.; 2) flaky materials, such as shredded cellophane, mica flakes, wood chips, etc.; 3) granular materials, such as ground nutshells or vitrified, expanded shale particles, etc.; and, 4) cement and

other slurries whose strength increases after placement. Essentially all LCMs are particulate materials designed to plug the formation and cause significant, severe formation damage. LCM's are therefore designed to plug the formation and prevent further loss of fluid. *See*, paragraph 8 of Declaration.

In contrast to LCMs which cause damage to the formation, fluid loss control additives of *Vollmer* are designed to be non-damaging. In addition to not creating formation damage, the additives of *Vollmer*, which are used to viscosify low- and high- density brines, do not evidence the compatibility problems seen in the prior art. *See*, paragraph 9 of Declaration. The incompatibility problems evidenced in the prior art, discussed in lines 32-67 of column 2 of *Vollmer*, include the formation of "fisheyes", micro-gels and emulsions. For instance, *Vollmer* discusses the weaknesses of in prior art methodologies wherein "insolubilizers" and/or hydrocarbon solvents are used as a fluid loss control additive (col. 3, l. 1 – col. 4, l. 11). One of the problems with these materials, however, is that organic phases often created formation-damaging emulsions.

Note further that in *Heying*, the expressed intent is to add the water absorbing polymer "to the drilling fluid via a hopper or pouring the material by hand from the bag or container or by any other means suitable to adding granular particulate matter. The material is then carried down the borehole where it absorbs water, swells and the swollen material forms a 'soft gel' on the fissures." (Bridging paragraph of columns 7 and 8.) *Vollmer* specifically discusses the undesirability of adding dry materials to water or aqueous brines. *Note*, for instance, the discussion in col. 2, ll. 32-48 of *Vollmer* relating to introduction of dry polymers to aqueous solutions. Applicants' claims recite a "pumpable" composition containing a water-superabsorbent polymer. There is no reason why one of ordinary skill in the art would have been motivated to combine *Heying* and *Vollmer* since *Heying* expressly teaches the addition of a granular material to the borehole and *Vollmer* expressly states the undesirability of using solid materials to thicken brines. Since the combination of a water-superabsorbent polymer and viscosifying polymer is contrary to the expressed intentions of *Heying*, there is no reason to conclude that one of skill in the art would have been motivated to use a water-superabsorbent polymer, as disclosed in *Heying*, as a component of a pumpable composition containing a viscosifying polymer. *See*, paragraph 10 of Declaration.

Like *Heying*, *Walker* does not disclose the presence of a viscosifying polymer. In

Walker, a water absorbent polymer is encapsulated by a film or waxy protective casing "to prevent the polymer from absorbing water". Once circulation has ceased, the water absorbent polymer melts, thereby "releasing the polymer to absorb water". The resulting expanded material then "will seal off fractures and large pores." (Col. 4, ll. 10-42). Thus, the water-absorbent composition of *Walker* is not a pumpable composition. The water-absorbent composition of *Walker* does not contain a viscosifying polymer. *See*, paragraph 11 of Declaration.

Alexander suffers from the same deficiencies. In *Alexander*, a pelletized composition is used as a lost circulation additive. The pelletized composition contains a "water-swellable absorbent resin". It is imperative in *Alexander* that the pellets "maintain their original size as they pass through the borehole" (bridging paragraph of columns 9 and 10). The pellets of *Alexander*, like *Heying* and *Walker*, do not employ a viscosifying agent and are specifically designed to be introduced into the wellbore as a solid. *See*, paragraph 12 of Declaration.

There is no reason to conclude that one of skill in the art would have been motivated to combine the teachings of any of *Heying*, *Walker* or *Alexander* with *Vollmer* to render the claimed pumpable composition of Applicants. While the secondary references may recite use of a water-absorbent polymer in drilling, the objectives and methodologies of *Vollmer* and *Heying*, *Walker* or *Alexander* in using the water-absorbent polymer are not analogous. *See*, paragraph 13 of Declaration.

The critical issue is whether one of ordinary skill in the art would have been motivated to combine any of the secondary references directed to a solid water-absorbent polymer containing composition (which does not contain a viscosifying agent) with *Vollmer* in order to render a pumpable thermal insulating composition. The answer is clearly "no" especially since "damaging" LCMs are counter to the objectives of *Vollmer*. In summary, no incentive existed to search the literature for formation-damaging loss circulation materials (LCMs), or include them into the formulations of Vollmer. Vollmer's formulations were designed to be non-damaging. *See*, paragraph 9 of Declaration.

Rejection Under 35 U.S.C. § 103(a) Over *Unger*, *Ishii* and *Nakashita*. The Examiner has rejected Claims 37-43 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,502,082 ("*Unger*"), U.S. Patent No. 5,965,651 ("*Ishii*") and U.S. Patent No. 5,077,336 ("*Nakashita*"). This ground for rejection is also traversed.

Claims 37-43 are directed to a pumpable thermal insulating composition of a water-superabsorbent polymer capable of absorbing a minimum of its own weight in water, viscosifying polymer and water and/or brine.

Unger discloses a process of making a solid crosslinked highly-porous polymer which exhibits high compressive strength. The resulting product is a solid absorbent which may be used to make such products as wall panels having insulation qualities (col. 12, ll. 31-41) wherein the hollow matrix (capable of entrapping air) renders the requisite insulation.

Note that the hydrogel of *Unger* is *not* a superabsorbent. Instead, the solid crosslinked porous absorbent body of *Unger*, derived from the hydrogel, is the superabsorbent. Note that the gelling agent functions as the crosslinking agent and the gelling agent is added to the hydrogel in order to form the crosslinked polymer which, in turn, when dried, is the superabsorbent. Note col. 5, l. 65 through col. 6, l. 29-30 of *Unger* wherein it is noted that the gelling agent "is *reactive* with the polymer to set or coagulate the pregel" (emphasis added). Thus, the absorbent material in *Unger* is the final reaction product of pregel and crosslinking agent; the hydrogel serving as a building block to make the porous solid. *See*, paragraph 14 of Declaration.

Unlike the solid absorbents of *Unger*, the thermal insulating composition of Applicants is a pumpable liquid which contains a superabsorbent. As discussed *supra*, the claims of Applicants recite a viscosifying agent in combination with the water-superabsorbent polymer. *Unger* only discloses a process of making a solid superabsorbent. *Unger* does not disclose a thermal insulating composition of a viscosifying agent and superabsorbent. Further, in order to be pumpable, the claims of Applicants also recite water and/or brine. *Unger* is not directed to a pumpable composition. Thus, the thermal insulating composition defined in Applicants' claims is not disclosed in *Unger*. *See*, paragraph 14 of Declaration.

Ishii, like *Unger*, discloses a process of making an absorbent material. The Examiner relies upon lines 26-59 of column 16, lines 3-20 of column 21 and the working Examples to support her rejection that *Ishii* discloses the combination of superabsorbent polymer and viscosifying polymer. A clear reading of the cited passages (and the remaining portions) of *Ishii* illustrates that such materials are used to make a "liquid-absorbing material composition", as referenced in the Examples. This composition contains a crosslinking agent, copolymer, water, organic solvent and plasticizer. Note, for instance, that the "liquid-absorbing material composition" of claim 1 of *Ischii* is illustrated by Examples 1-7. This composition is *not* a liquid

absorbent material. Claim 1 of *Ishii* clearly states the invention to be "a composition *for preparing a liquid-absorbing material*". The liquid-absorbing material in *Ishii* is the molded product. *Note* Examples 8-14 of *Ishii* directed to forming a molded product from such compositions which, in turn, exhibit "liquid absorption magnifications". *See*, col. 24, ll. 1-7. Thus the liquid absorbing material of *Ishii* is not the "liquid-absorbing material composition" described in col. 2, l. 64 through col. 4, l. 61. The liquid-absorbing material of *Ishii* is the molded product. *Note* further claim 12. *Ishii* does *not* disclose the addition of a viscosifying polymer and water or brine to the absorbent molded product. Thus, *Ishii* does not disclose the combination of water-superabsorbent polymer, viscosifying polymer and water and/or brine as claimed by Applicants. *See*, paragraph 15 of Declaration.

Nakashita discloses a composition containing a plasticizer, water-soluble or absorbing gel and polyvinyl chloride. An emulsifier is further required in order to properly mix the water-soluble gel or suspension and polyvinyl chloride. The resulting product is a flexible rubber which is capable of retaining its shape. Thermal insulating compositions, as stated *supra*, must be pumpable and clearly could not behave like rubber. In any event, the composition of *Nakashita* does not disclose the combination of a water-absorbent polymer and a viscosifying agent. At best, the passages relied upon by the Examiner (col. 2, ll. 10-36 and col. 3, ll. 25-39) are directed to the production of a water-absorbing gel or polymer. *See*, paragraph 16 of Declaration. Note that the "water-soluble polymers" of column 2 of *Nakashita* are used as an alternative to the "water-absorbing high polymer". The combination of water-absorbent polymer and viscosifying polymer is not disclosed, nor suggested, by these passages. Reconsideration therefore is respectfully requested.

Applicants request the Examiner to contact the undersigned for any reason deemed prudent to expedite the handling of this application and issuance of a Notice of Allowance.

Respectfully submitted,

Dated: May 23, 2007

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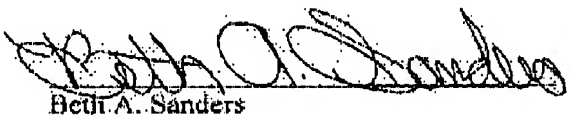

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